UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,512	05/25/2005	Jae-Hyun Kim	17172-006US1 OPP 050737 U	6483

26161 7590 08/19/2008
FISH & RICHARDSON PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
LEE, SIN J	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
08/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/536,512	KIM ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 6-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 6-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/7/08, 5/21/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 4, 5 and 16-21 are canceled.

2. In view of t he amendment, previous 102(e) rejection on claims 1, 2 and 6-15 over Pavelcheck et al'689 is hereby withdrawn.

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-3 and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang et al ("A Novel Organic Bottom Anti-Reflective Coating Material for 193 nm

Excimer Laser Lithography", Polymer 41 (2000) pg.6691-6694) in view of Pavelcheck et al (US 6,767,689 B2).

Hwang teaches a bottom anti-reflective coating composition for 193 nm excimer laser lithography containing polyvinyl phenol (as a UV absorber), present crosslinking agent of Formula 2, and present thermal acid generator of Formula 4 (see abstract and Fig.1). Hwang's polyvinyl phenol also teaches present adhesivity enhancer of Formula 1 as well. Hwang does not teach present light absorbing agent of Formula 3.

Pavelcheck teaches (col.2, lines 28-40) an antireflective coating composition (for use with 248 nm and 193 nm lithography) containing a thermal acid generator and a crosslinking component. Pavelcheck furthermore teaches (col.6, lines 32-51 and claim 12) the use of a polymer having deep UV chromophores (such as those containing anthracyl groups) in the antireflective coating composition for deep UV applications so that the polymer will absorb reflections in the deep UV range (see col.6, lines 33-49). As specific example of such polymer, Pavelcheck discloses (see Example 1) a copolymer of anthracene methyl methacrylate, methyl methacrylate and 2-hydroxyethyl methacrylate, which teaches present polymer of Formula 3. Based on Pavelchek's teaching, it would have been obvious to one skilled in the art to use Pavelchek's polymer of Example 1 in Hwang's anti-reflective coating composition, which is used in deep UV applications, in order to absorb reflections in the deep UV range as taught by Pavelcheck. Thus, Hwang in view of Pavelcheck render obvious present inventions of claims 1-3 and 6-15.

Response to Arguments

6. Applicants argue that Pavelcheck teaches an antireflective composition containing a light absorbing agent, i.e., an anthracene-containing polymer *or* polyvinylphenol. That is, applicants argue that Pavelcheck does not teach or suggest a composition containing an anthracene-containing polymer *and* polyvinylphenol. Thus, applicants argue that by combining Pavelcheck' teaching with those in Hwang, one skilled in the art would have at most been motivated to modify Hwang's composition by replacing the light absorbing agent in that composition, i.e., polyvinylphenol, with the light absorbing agent taught in Pavelcheck, i.e., an anthracene-containing polymer. As a result, applicants argue, the modified composition would contain only an anthracene-containing polymer, but no polyvinylphenol. The Examiner disagrees. Pavelcheck *clearly suggests using polyvinylphenol and anthracite-containing polymer together*. See col.7, lines 13-17 which states "[w]hile antireflective composition resin binders having such absorbing chromophores are generally preferred, antireflective composition of the invention *may* comprise other resins ether as a ***co-resin*** or as the sole resin binder component." Since both Hwang and Pavelcheck are drawn to an antireflective composition used in deep UV applications, and since Pavelcheck clearly teaches that an anthracene-containing polymer and polyvinylphenol can be used together, it is still the Examiner's position that it would have been obvious to one skilled in the art to use Pavelchek's polymer of Example 1 in Hwang's anti-reflective coating composition together with Hwang's polyvinyl phenol in order to further absorb reflections in the deep UV range.

Applicants also argue unexpectedly superior results of present invention by pointing to the result shown in Table 1 of present specification. However, the comparative data were not persuasive in showing unexpected superior results of present invention. First of all, applicants used different amounts for crosslinking agent for Examples and Comparative Examples. Also, the thickness of coating is different between Examples and Comparative Examples. Also, since the crosslinking agent of Chemical Formula 2a, which was used in the comparison, is a preferred embodiment of dependent claim 3, the comparison made is not commensurate in scope with the broadest claim. See MPEP 716.02(d). Finally, the results for Examples and Comparative Examples are merely stated as "good" and "pattern collapse". Since applicants give no definition for “good”, which is a relative term, it is difficult to ascertain degree of improvement.

For the reasons stated above, present 103(a) rejection over Hwang in view of Pavelcheck still stands.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sin J. Lee/
Primary Examiner, Art Unit 1795
July 31, 2008

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/536,512	KIM ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1795	